Amendments to the Claims

Kindly cancel claims 5 and 9.

Kindly amend claim 1.

1. (Currently amended) Method for production of a CO_2-rich gas stream and a H_2-rich gas stream, characterized in that the method comprises the following steps:

a) natural gas and water are fed to a reforming reactor and converted to synthesis gas under supply of an O_2-rich gas to the reactor;

b) the gas stream from a) is shifted, in one step, whereby the content of CO is reduced and the amounts of CO_2 and H_2 are increased by reaction of H_2O at a ratio H_2O:CO of from 1 to 9;

c) the gas stream from b) is separated in a separation unit into a CO_2-rich and a H_2-rich gas stream, respectively, wherein the pressure in the CO_2-rich gas stream after the separation is from 5 to 100 bar.

2-3. (Previously cancelled)

4. (Previously presented) Method according to claim 1, characterized in that the ratio H_2O:CO in the shift process is from 1.5 to 4.

5. (Cancel)

6. (Previously presented) Method according to claim 1, characterized in that the pressure in the CO_2-rich gas stream after the separation unit is from 5 to 50 bar.

7. (Previously presented) Method according to claim 1, characterized in that the carbon part in the H_2-rich gas stream is from 1 to 20 % by volume.

8. (Previously presented) Method according to claim 1, characterized in that the carbon part in the H_2-rich gas stream is from 5 to 15 % by volume.

9. (Cancel)

10. (Previously presented) Method according to claim 1, characterized in that the natural gas in step a) is supplied with air/oxygen enriched air.

11. (Previously presented) Method according to claim 1, characterized in that the reformer reactor is a partial oxidation reactor.

12. (Previously presented) Method according to claim 1, characterized in that the reformer reactor is an autothermal reformer.

13. (Original) Method according to claim 12, characterized in that the gas stream from a combustion chamber in an autothermal reformer is contacted with a catalyst bed.

14. (Previously presented) Method according to claim 11, characterized in that the reforming is carried out without a catalyst.

15. (Previously presented) Method according to claim 1, characterized in that the gas stream out of the reformer has a temperature within the interval from 800 to 1200°C.

16. (Previously presented) Method according to claim 10, characterized in that the CO_2-rich gas stream includes at least part of N_2.

17. (Previously presented) Method according to claim 1 wherein the produced CO_2-rich gas stream is applied for injection into marine formations.

18. (Previously presented) Method according to claim 1 wherein the produced H_2-rich gas stream is applied for hydrogenation.

19. (Previously presented) Method according to claim 1 wherein the produced H_2-rich gas stream is applied as a source of energy / fuel in fuel cells.

20. (Previously presented) Method according to claim 1 wherein the produced H_2-rich gas stream is applied for the production of electricity.

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Claims

1. Method for production of a CO_2-rich gas stream and a H_2-rich gas stream, wherein the method comprises the following steps:

a) natural gas and water are fed to a reforming reactor and converted to synthesis gas under supply of a O_2-containing gas;

b) the gas stream from a) is shifted, whereby the content of CO is reduced and the amounts of CO_2 and H_2 are increased by reaction of H_2O;

c) the gas stream from b) is separated in a separation unit into a CO_2-rich and a H_2-rich gas stream, respectively;

characterized in that the pressure in the CO_2-rich gas stream after the separation is from 5 to 100 bar.

2. Method according to claim 1,
characterized in that the shift process in b) is carried out in one step.

3. Method according to claims 1-2,
characterized in that the ratio H_2O:CO in the shift process is from 1 to 9.

4. Method according to claims 1-3,
characterized in that the ratio H_2O:CO in the shift process preferably is from 1.5 to 4.

5. Method according to claims 1-4,
characterized in that the carbon part in the H_2-rich gas stream is from 1 to 20% by volume.

6. Method according to claims 1-5,
characterized in that the carbon part in the H_2-rich gas stream is from 5 to 15% by volume.

7. Method according to claims 1-6,
characterized in that the natural gas in step a) is supplied with an oxygen rich gas.

8. Method according to claims 1-6,
characterized in that the natural gas in step a) is supplied with air/oxygen enriched air.

9. Method according to claims 1-6,
characterized in that the reformer reactor preferably is s partial oxidation reactor.

10. Method according to claims 1-9,
characterized in that the reformer reactor particularly is an autothermal reformer.

11. Method according to claim 10,
characterized in that the gas stream from a combustion chamber in an autothermal reformer is contacted with a catalyst bed.

12. Method according to claim 10,
characterized in that the reforming is carried out without a catalyst.

13. Method according to claims 1-12,
characterized in that the gas stream out of the reformer has a temperature within the interval from 800 to 1200°C.

14. Method according to claim 8,
characterized in that at least a part of N_2 follows the CO_2-rich gas stream.